Phase 1 Timeline

Here is a brief overview of the flights that made up Phase 1 of the International Space Station program:

STS-60 launched Feb. 3, 1994, was the first flight of a cosmonaut aboard the shuttle, Sergei Krikalev as a mission specialist—conducted joint science programs.

STS-63, launched Feb. 3, 1995, with Cosmonaut Vladimir Titov aboard, rendezvoused with Mir, closed to within 37 feet and performed a fly-around, but did not dock. Docking equipment was tested for future missions, and communications procedures between the two mission control centers were validated.

Mir 18 began with the launch of Astronaut Norm Thagard along with Cosmonauts Vladimir Dezhurov and Gennady Strekalov in March 1995. Thagard spent 115 days on Mir. During that time the Spektr science module, with more than 1,500 pounds of research equipment from the U.S. and other countries, was launched to Mir.

STS-71 was launched with a replacement crew, Cosmonauts Anatoly Solovyev and Nikolai Budarin, on June 27, 1995, and returned Dezhurov, Strekalov and Thagard to Earth.

STS-74 was the first shuttle assembly flight to Mir. Launched Nov. 12, 1995, it carried a Russian-built, U.S.-funded docking module with two attached solar arrays.

STS-76 began the continuous U.S. stay on Mir, transporting Shannon Lucid to the station after a March 22, 1996, launch. A single Spacehab module was aboard, demonstrating logistics capabilities. Astronauts Linda Godwin and Rich Clifford placed experiment packages on the Mir's docking module during a space walk.

STS-79 launched Sept. 16, 1996, included a double Spacehab module. That flight brought Lucid home and replaced her with John Blaha. During Lucid's months aboard Mir, the Priroda module, carrying about 2,200 pounds of U.S. science hardware, was attached to the space station.

STS-81, launched Jan. 12, 1997, replaced Blaha with Jerry Linenger. During Linenger's stay aboard the fire of February 1997 occurred, offering new challenges and new information. Linenger conducted the first space-walk by a U.S. astronaut outside Mir wearing a Russian spacesuit.

STS-84 launched replacement Mike Foale toward Mir on May 15, 1997. Russian Elena Kondakova flew as a mission specialist. The Progress vehicle collision which damaged the Spektr module occurred during Foale's stay—resulting in loss of some science. A remarkable salvage and replanning effort by the science community maximized the scientific return. Foale conducted a space walk with Anatoly Solovyev to survey damage of the Spektr module.

STS-86, launched Sept. 25, 1997, picked up Foale and replaced him with David Wolf. Astronauts Scott Parazynski and Vladimir Titov conducted a joint space walk, the first in which a Russian wore a U.S. space suit. Wolf conducted a space walk in January with Solovyev to conduct scientific experiments.

STS-89, launched Jan. 22, replaced Wolf with Andy Thomas. The flight also carried Cosmonaut Salizhan Sharipov to Mir.

S79E5095

S79E5277

S79-304-001

STS081-372-035

STS086-334-029

STS086-364-028

Voice of experience clear on Phase 1's importance

Seven astronauts spent more than 21/2 years aboard the Russian Space Station Mir. More than two years of that time was a continuous U.S. presence in space. Here are some thoughts from the crew members, on a variety of topics.

Norman Thagard

On leaving Mir. "This is the way a space station ought to work. You have a space station and a good transport vehicle. Our shuttle has solved some of the shortcomings of Mir space station which was lack of ability to transport things back to Earth at the end of the flight, and the space station has provided another goal and task and job for our space shuttle."

Shannon Lucid

In a talk from Mir with NASA Administrator Daniel Goldin: "I think we have gained a lot of experience on how to deal with a long flight versus a short flight, which we have so much experience with, and I think we handle very professionally. And I think we've made great strides in how we can operate on the [International] Space Station. So I think this has been a very valuable experience and we've gained a great amount of experience on the flight and the people on the ground and how to work with a flight like this. Frankly, I've learned a lot from being with the Russian crews, …And it's just been a great experience."

John Blaha

During his training, shortly before launch. "I think our primary mission is our relationship with the Russians, so working with my two crew mates is the primary mission. The next one of course is my own health and well-being, because that's something to pay attention to on a long-duration space flight. And after that, of course, to conduct the experiments that we've been trained to conduct up here."

Jerry Linenger

In a letter to his son after more than 100 days in space: "Space exploration, space colonization in its infancy, is tough. You rely on machines to provide the essentials of life. You are isolated, almost completely; and therefore need to be self-sufficient to a degree that is hard to comprehend. You are surrounded by vacuum, traveling 18,000 mph. Almost every piece of equipment is vital. There is no room for mistakes. You conduct complex experiments in dozens of disciplines, and you are responsible to execute them properly. Your survival depends upon you doing things correctly not once, but every time."

Mike Foale

At welcome-home ceremonies. "What we're doing, working together, is gluing countries of the world together. Russia has overcome enormous problems in this last four or five months in space, but not alone—with American help. This is an example, not just to our countries, but to others who are participating in our space program and others who might want to in the future, that there are great things for us to do as a planet in space. I hope the children here who see this example, will notice this more than the strife and awful wars that seem to be occurring around the world."

David Wolf

Looking back: "Agreements can be signed at any level between two countries to cooperate in space. But the actual partnership is based on mutual trust and respect which must be built person to person. Phase 1 has achieved that not just with the astronauts in flight, but with the thousands of people working together—in control centers, the engineers and scientists—to achieve that mutual trust. I don't feel it would have been imaginable to conduct ISS without having developed that trust through the shuttle-Mir program.

"Now we are well-poised to move forward into the International Space Station. In many cases, we've identified and solved the problems in partnership, in both experimental and systems hardware. That will assure much higher productivity in the International Space Station program."

Andy Thomas

From Mir. "At the beginning of this century, we saw the genesis of powered flight. Some 40 years ago, NASA was begun and our first steps into the cosmos were taken. Since that time we've learned to live and work on a daily basis in space. It's amazing to think what the next 40 years might bring us in terms of space exploration." ❑